

Appl. No. 10/660,503
Amendment in response to
Office Action mailed 12/02/2005

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 1 in which element 40 has been added.

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REMARKS

In the Office Action mailed 08/09/2006, the Examiner objected to the drawings and objected to claims 1 and 8. Figure 1 and claims 1 and 8 have been amended to address those objections. The Examiner rejected claims 1-3, 6, 11, 14 and 15 under 35 U.S.C. s. 103(a) as unpatentable over Fahlen U.S. Patent 4,625,254 in view of Flindall et al. U.S. Patent 4,912,592; rejected claims 4 and 5 under 35 U.S.C. s. 103(a) as unpatentable over Fahlen in view of Flindall et al. and E.F.W. Beck et al. U.S. Patent 2,473,850; rejected claim 10 under 35 U.S.C. s. 103(a) as unpatentable over Fahlen in view of Flindall et al. and Oertel et al. U.S. Patent 5,500,782; rejected claims 12 and 13 under 35 U.S.C. s. 103(a) as unpatentable over Fahlen in view of Flindall et al. and Winkelmann U.S. Patent 5,621,602 and rejected claim 8 under 35 U.S.C. s. 103(a) as unpatentable over Fahlen in view of Flindall et al. and Kato. Claim 1 has been amended to further clarify the invention. It is submitted for the following reasons that the amended claims are patentable over the cited references.

The present invention discloses a device for protecting workers working on high voltage electrical transmission cables both from potential rise due to ground faults and from accidental energization of the line. The device is connected at one terminal to ground and the other terminal to the distribution cable. To handle the large current which flows due to accidental energization of the distribution line, it uses a combination of a precision gap with a main insulated gap, such that the flashing of the precision gap causes the destruction of the insulation in the main gap and a shorting of the main electrodes. To prevent the precision gap from flashing when the event is a rise in potential due to a ground fault, a surge arrester and resistor are connected in parallel with the precision gap, whereby the surge arrester has a

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voltage rating less than the breakdown voltage of the precision gap.

Fahlen discloses a protective circuit for a series capacitor in a high-voltage network. A voltage dependent resistor in series with a linear resistor is connected in parallel across the capacitor bank to protect the capacitor bank. The problem addressed by Fahlen (column 1 lines 27-34) is that if a short circuit occurs in the resistors a total breakdown may result. Fahlen therefore provides, to protect the resistors, a triggered spark gap in parallel to the resistors which sparks before the resistors are overloaded (column 2, lines 46-48). That is completely opposite from the claimed structure wherein the surge arrester has a voltage rating below the breakdown voltage of the precision gap to prevent the precision gap from flashing during a ground fault. The Examiner points to column 1, lines 39-57 of Fahlen as disclosing a circuit in which the surge arrester has a breakdown voltage below the breakdown voltage of the precision gap. However that portion of the disclosure is referring to the prior art devices which had problems which are overcome by Fahlen. Thus Fahlen in fact teaches away from the claimed safety device by teaching that a precision gap can be used to protect a voltage dependent resistor in series with a linear resistor which are protecting a capacitor bank.

It follows that the person of average skill in the art would not be led to the presently claimed invention by combining Fahlen and Flindall et al. The purpose of the surge arrester in the present invention is to prevent the precision gap from flashing at lower breakdown voltages such as occur in a ground fault, but once a sufficiently high voltage is reached the precision gap fails. The precision gap is used in combination with a main insulated gap so that when the precision gap fails, it destroys the insulation in the main gap and causes the conductors to short together to carry the high energy current to ground. The Examiner states that it "would have

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been obvious to one skilled in the art at the time the invention was made to have modified to [*sic*] spark gap of Fahlen to incorporate a spark gap with an insulated gap between two electrodes as disclosed by Flindall in order to protect the gas surge arrester from being damaged due to surge voltage condition." But that is very different from the present invention as claimed, where it is the surge arrester that protects the spark gap from flashing up to the voltage expected from a ground fault event. In the present invention the spark gap with an insulated gap between two electrodes does not protect the gas surge arrester from being damaged due to surge voltage condition.

It is submitted therefore that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to have arrived at the presently claimed invention, as claimed in amended claim 1, by combining Fahlen and Flindall et al. It is submitted therefore that claim 1, and claims 2-6, 8 and 10-15 which depend from it are allowable, and issuance of a Notice of Allowance is therefore respectfully requested.

Respectfully submitted,

By: _____



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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Bruce M. Green Reg. No. 30,524
Name of Person Signing Certification

Bruce M. Green Feb. 9, 2007